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Employment Outlook For 1984 New England College Graduates

U.S. Department of Labor
Bureau of Labor Statistics
New England Regional Office

Regional Report Number 84-3

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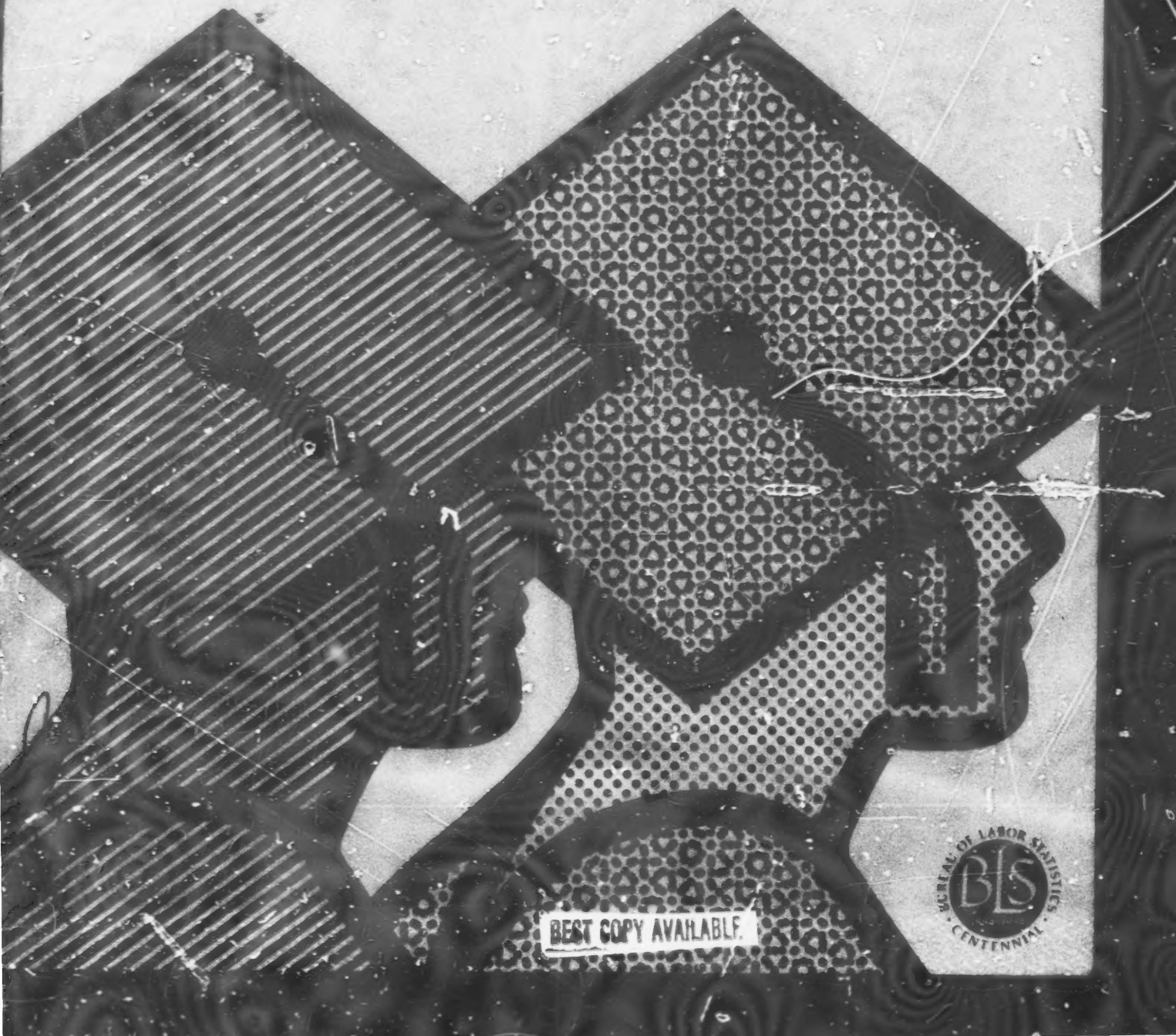

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EMPLOYMENT OUTLOOK FOR 1984
NEW ENGLAND COLLEGE GRADUATES

U.S. DEPARTMENT OF LABOR
Raymond Donovan, Secretary

Bureau of Labor Statistics
Janet L. Norwood, Commissioner

New England Regional Office
Anthony J. Ferrara, Regional Commissioner
1984

Regional Report Number 84-3

PREFACE

This report is based upon information provided by placement directors and career development counselors in a representative sample of colleges and universities located throughout the six New England States.

Survey information was obtained through personal interviews conducted by the following professional staff of the Bureau's New England Regional Office--Daryl H. Delano, Ronald E. Fionte, Jeffrey D. Thomson and Denis McSweeney. The report was prepared and written by Daryl H. Delano.

The Boston Regional Office wishes to express its sincere appreciation for the cooperation and assistance of the respondents who provided the information used to compile this report. Material in this report is in the public domain and may, with appropriate credit, be reproduced without permission.

Anthony J. Ferrara
Regional Commissioner of Labor Statistics

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NEW ENGLAND'S 1984 COLLEGE GRADUATES ENJOY IMPROVED EMPLOYMENT PROSPECTS THIS YEAR; GRADUATES WITH TECHNICAL SKILLS REMAIN IN GREATEST DEMAND

I. SUMMARY

After two consecutive down years, New England's 1984 college graduates are facing significantly improved employment prospects. Recruiting activity is approaching the pre-recessionary levels reached in 1980-81, but remains below the record pace of the late 1970's. Job offers to graduates are more plentiful this year, with starting salaries up 4-5 percent over 1983 levels, but well below the double-digit increases of the 1970's.

The demand for graduates with technical skills--such as engineering, computer science and accounting--continues to be far greater than that for liberal arts, education, and general business graduates with limited special skills. As a result, those graduates with specialized training command significantly higher starting salaries than their non-technical classmates. However, even for liberal arts majors, job prospects appear to be somewhat brighter this year. The more versatile liberal arts graduates--those with technical electives, good communication skills, and a high grade point average--are in increasing demand for entry-level management training positions in financial institutions, retail trade establishments, and large manufacturing firms.

The demand for engineering graduates is bouncing back after 1983 which was the worst year for new engineering graduates since the 1973-75 recessionary period. As has been the case for several years, graduates of electrical, mechanical and chemical engineering programs are in the greatest demand, with starting salaries averaging about $26,500. The increased defense spending in recent years has benefitted the region in that many electronics, computer equipment,

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and telecommunications equipment manufacturers are now actively seeking new electrical, and mechanical engineers. This defense-related benefit coupled with a generally strong non-defense "high technology" industry base has resulted in many job opportunities with New England companies for those graduates who wish to remain in New England.

Graduates in computer science programs remain second in demand to engineers with demand continuing quite strong for the sixth year in a row, and it is projected to remain high for the next decade. To meet this present and future demand, virtually every school in the region has established computer science programs at the undergraduate level. Starting salaries for these fortunate graduates, depending on the industry, should range form $23,000 to $28,000.

The demand for the 1984 MBA graduate continues to increase but so does the supply. As a result, competition among graduates for well-paying positions has intensified and the salaries being offered have begun to level off. Overall, salaries offered to 1984 graduates of MBA programs in New England colleges averaged about $27,000, approximately five percent above last year's level.

The graduate with a liberal arts degree will almost always find it more difficult to find a first job than will the technically trained. A majority of placement officials agreed that what attracts a growing number of employers to liberal arts graduates are the well-developed analytical and communication skills that are the hallmarks of this group. At a time when employers are expressing increasing concern about what they perceive to be a steady decline in the writing and speaking skills of college graduates, the talents of the broadly-educated, articulate English major are especially prized. Those who can express themselves clearly and logically, and who are able to approach a problem with a trained analytical mind will always have a good chance for success in the business world. Liberal arts graduates are often an especially resourceful group possessing many and

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varied talents with the ability to learn and to adapt to an ever-changing world, including new and emerging work requirements. Additionally, placement officials report that liberal arts graduates who have taken technical electives and demonstrate quantitative skills are in the best position to market their skills.

The demand for skills acquired by New England college graduates should be viewed in the context of a nationwide labor market. Consequently, graduates significantly increase their chances of finding employment which fully utilizes their training if they are willing to be geographically mobile. More than half of all firms recruiting on New England campuses are either headquartered outside of the region, or are seeking to fill positions which exist in other parts of the country.

In assessing the next decade, there will be basic demographic shifts as the proportion of the nation's college age population falls sharply as a result of the "baby bust" of the 1960's. Thus, the number of bachelor's degrees awarded is projected to increase slowly through the 1980's and to taper off by the end of the decade. In terms of demand, professional, technical and managerial jobs are expected to grow by about 8 million. Although this represents a respectable average growth rate of 30 percent, it will no longer be the fastest growing occupational category as was the case in the 1960's and 1970's. However, there should be increased demand for college educated workers in nontraditional occupations as the workplace continues to evolve and to grow more complex and knowledge-oriented.

The job market faced by college graduates in the 1980's is expected to be as competitive as it was in the previous decade. Throughout the 1980's, there will be continuing evidence of an imbalance between the supply and demand of college graduates. It is projected that, on average, 20 percent of the students graduating from a 4-year college program will have to accept a first job which does not require the skills of a college graduate. During the 1980's, an average of about 1.5

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million college graduates a year will compete for the 1.2 million new jobs which require a college education. The existing surplus of college trained workers coupled with a slowing of traditional job growth could add up to a highly competitive job market for the college graduate.

In conclusion, while a college education may not provide the automatic job ticket it once did, the college graduate will fare better than the less educated worker in the knowledge-intensive labor market of the 1980's. Although the future cannot be predicted with certainty, it is likely that college graduates will continue to experience superior earnings as well as a lower incidence of unemployment than others.

Table 1. Average Entry-Level Salary Offers for 1984 New England College Graduates, by Major Field of Study

Major	Salary	Approximate Change From 1983
Engineering	$26,500	+4%
Computer Science	25,000	+3
Accounting	19,000	+4
Finance	18,000	+5
Marketing	18,000	+4
Economics	17,000	+5
Liberal Arts	16,000	+4
Education	12,500	+3
Engineering, Master's Degree	31,000	+3
Business, Master's Degree	27,000	+5

Note: The March 1983 Bureau of Labor Statistics survey of professional, administrative, technical, and clerical pay gathered information on the average salaries for selected white-collar occupations in medium, and large-size establishments. Average salaries of workers in entry-level positions during March 1983 were as follows:

Accountants	$19,519
Programmer/Analysts	19,777
Engineers	25,556

Similar data on March 1984 white-collar salaries will be available from BLS by early summer 1984.

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II. CHANGING TRENDS IN EMPLOYER RECRUITING

Several placement officials offered their reflection on changes in recruiting patterns and recruiting methods that they have seen in the past few years. In general, they feel that employers raised their hiring standards during the "lean" recruiting years of 1982 and 1983 and to a certain extent employers are maintaining these high standards because of the uncertain economic times ahead. They are more concerned about the turnover of trained staff, about the business costs of training new staff, and they are recruiting for longer periods of time.

In recent years, placement officials have indicated that pre-screening of applicants for interview slots is becoming increasingly common. Because of the time and travel costs involved in reaching college campuses, particularly those well outside of the major New England population centers, there have been increasing demands from recruiters that their visit be made as cost productive as possible. Only by yielding a large proportion of job offers to total student interviews can some employers justify the expense of a recruiting visit to a college campus which is "off the beaten path". An increasing number of colleges have responded to this potential threat to their roster of recruiters by submitting student resumes to employers who request them well in advance of their scheduled visit. Employers will review the potential interviewees and visit the campus if they believe it will be worthwhile in terms of the quality of interviews likely to take place, and the chances of finding the people with the skills and background that they're looking for. Although pre-screening has been controversial on some campuses, as it tends to make for a "closed" versus an "open" interview process, it does help employers and the placement office recruit more efficiently.

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Another way in which employers seek to control their recruiting expenses is through a regional "job fair". Many employers, usually small but with an increasing representation of medium and large-size firms, have students from a number of institutions brought "en masse" to the recruiter--rather than the traditional recruitment visit to individual campuses. This is particularly popular in areas with no real concentration of colleges and universities where single campus recruiting visits for many companies would be cost prohibitive. Employers tell many anecdotal stories of "diamonds in the rough", laboring in an out-of-the way college, who are discovered in this way.

An additional procedure employed by some placement officials to more effectively match the appropriate student with the limited number of interview slots, is the relatively new process of "bidding" for interviews. Although there are variations on the system, the general process involves awarding a fixed number of interview "points" to seniors who are then free to use these points to bid on interview slots whose value varies from employer to employer. For accounting majors, a "Big Eight" national accounting firm might be a very attractive potential employer and therefore a very popular interview. The "cost" to the student of an interview slot with this firm would likely be much higher than a slot with a regional firm. The process forces students to be more selective in the firms they choose for interviews and requires them to give more thought to the type of employer for whom they would like to work. Although the process is deemed unfair by many students who feel that they are often forced to put all their "eggs in one basket", it does allocate the scarcest interview slots on the basis of well-established procedures.

III. JOB MARKET FOR THE COLLEGE-EDUCATED

The job market experienced by college graduates during the 1980's and early 1990's is unlikely to be more favorable than in the 1970's. At the beginning of this decade there was already a surplus of almost 4 million college graduates in

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the labor force, either unemployed or employed in jobs that did not require their level of education. The majority of this underemployed pool can be expected to compete for jobs that more fully utilize their education. To the extent that this group competes for job openings requiring a college degree, new labor force entrants will face even greater competitive pressures.

Throughout the 1980's, there will be continuing evidence of this imbalance between the supply and demand of college graduates. It is projected that, on average, 20 percent of the students graduating from a 4-year college program will have to accept a first job which does not require the skills of a college graduate. An even larger number will take jobs that, while generally requiring a college background, do not utilize the specific skills obtained in their collegiate major course of study. During the 1980's an average of about 1.5 million college graduates a year (comprised of about one million new graduates and the balance college-educated labor force re-entrants) will compete for the 1.2 million new jobs which require a college education. The vast majority of these jobs are in the professional, managerial, and technical sales specialities.

The reasons for this projected imbalance are many and varied. A major factor, unquestionably, is the large "baby boom" surge in population growth experienced during the 1945-1965 period. The children of this generation are now active members of the labor force, working their way into the prime working age years. As a result, the prime working years of 25-54 have begun to "bulge"--with a resultant increase in competition among these products of the "baby boom". At the same time, this group has dramatically increased its average level of educational attainment. Whereas in 1960 only 9.7 percent of those workers age

25-64 possessed a 4-year college degree, by 1983 about 24 percent of workers in this age group were college-educated. Obviously, this has had the effect of increasing competition especially for those jobs requiring a degree. Not unrelated to all of this is the fact that women college graduates are increasingly likely to be members of the labor force. The proportion of women with college degrees who were labor force participants increased from about 60 percent in 1970 to nearly 70 percent in 1983. This increase primarily stemmed from the growing tendency of married women graduates between the ages of 25 and 44 to combine work with family responsibilities. This growing labor force commitment of women college graduates further increased the impact of the baby-boom generation on the labor force. A final factor at work here is the process of educational upgrading that has occurred in many technical, administrative, and sales occupations. Although this process of upgrading the educational requirements for entry into certain jobs is often related to the increased complexity of the position or sophistication of product, it can also reflect an employer's response to the relatively large supply of available college graduates. Given the choice between a graduate and non-graduate for a job not really requiring college skills, the employer will often select the individual with a degree.

Faced with the prospect of a hotly competitive job market, students might reasonably question the value and utility of a college degree today. However, by all objective measures a college education continues to be good investment. According to data from the Census Bureau, a man with a college degree can expect to earn $1,165,000 (in constant 1981 dollars) between the ages of 25 and 64, fully 45 percent more than the same person with only a high school education. A postgraduate degree would earn an additional $108,000 in income. Lifetime expected earnings of a woman college graduate, although considerably below that

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of men, would also be higher than for high school educated women, and a postgraduate degree would add relatively more to a woman's earning power than to a man's.

Unemployment rates also tend to be consistently more favorable for college graduates than for non-graduates. During March 1983, the overall unemployment rate for those in the 25-64 year old group was 9.0 percent. For college graduates the rate was 3.5 percent, while the rate for those with only a high school diploma was nearly three times as high. Those with at least one year of postsecondary training also had an overall rate below the 9.0 percent average. Although the March 1983 unemployment rate for black college graduates was a relatively high 8.1 percent, this represented less than half the 18.9 percent rate for black workers with only a high school education.

Current unemployment rates for occupational groups in which the majority of employed individuals are college graduates are much lower than for other groups in which college graduates are less heavily represented. As Table 2 shows, the national unemployment rate for all workers in April 1984 was 7.6 percent. However, for professional workers the rate was 1.9 percent, while administrative and managerial specialists recorded a 2.6 percent rate. Other skilled workers--those likely possessing some postsecondary training, although probably not a 4-year degree--including technicians (2.8 percent), mechanics and repairers (5.7 percent), and other precision production and craft workers (6.2 percent) also had relatively low unemployment rates. The unemployment statistics clearly demonstate the elationship between the degree of education and skill training possessed by individuals, and their relative success in today's highly specialized job market.

Thus, assuming no catastrophic economic, political, or social upheaval in the coming decade, we can project that the college graduate will be relatively

successful in finding employment in the years ahead. Despite the problem of supply-demand imbalance, most of these jobs will offer challenge and provide a certain degree of satisfaction to the college-educated. For graduates who possess the skills most in demand in a changing economy, and who are willing to be flexible, geographically mobile, and patient in their job search, the opportunities will be excellent.

Table 2. Unemployment Rates by Occupational Group, United States, April 1984; Not Seasonally Adjusted

Occupation	Unemployment Rate April 1984
Total, 16 years and over	7.6%
Managerial and professional specialty	2.2
Executive, administrative, and managerial	2.6
Professional specialty	1.9
Technical, sales, and administrative support	5.0
Technicians and related support	2.8
Sales occupations	5.4
Administrative support, including clerical	5.1
Service occupations	9.2
Protective service	5.3
Service, except private household and protective	10.0
Precision production, craft, and repair	8.1
Mechanics and repairers	5.7
Construction trades	12.0
Other precision production, craft, and repair	6.2
Operators, fabricators, and laborers	11.9
Machine operators, assemblers, and inspectors	10.7
Transportation and material moving occupations	9.3
Handlers, equipment cleaners, helpers, and laborers	16.7
Construction laborers	25.6
Other handlers, equipment cleaners, helpers, and laborers	15.0

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The review that follows documents the fact that nearly all of the occupations projected to be among the fastest growing in the next ten years will require, at a minimum, a bachelor's degree.

IV. OCCUPATIONAL EMPLOYMENT DEMANDS FOR COLLEGE GRADUATES

The major changes taking place in the nation's economy will have a significant effect on the skills demanded of the work force during the remainder of this century. Although the most recent industry and occupational projections indicate that a wide range of job skills will be needed in the years ahead, jobs requiring a college education are expected to show especially large employment growth between now and the year 1995.

Employment demand in many occupations will be affected by technological change through the next 10-15 years. The rapid expansion of "high technology" research and applications will make for a large growth in the employment of scientists, engineers, computer specialists, and the like. They will be needed to design, develop, and utilize such products as computers, scientific and medical instruments, communication equipment, and a wide variety of sophisticated automated equipment including robots.

However, despite the employment gains projected in high technology manufacturing industries between now and 1995, most new job growth is expected to occur in service-producing industries. These service-producing industries--broadly defined as all industries except the agriculture/forestry/fisheries, mining, construction, and manufacturing sectors of the economy--are projected to account for about three-quarters of all new jobs between 1982 and 1995. Particularly fast-growing industries should be the medical care, business services, and professional services groups, all industries which require significant numbers of college graduates.

Tables 3 and 4 present "top ten" lists of those occupations and industries projected to experience the most rapid growth between 1982 and 1995. The rankings are based upon a calculation of the percentage change expected in employment levels between the two years. It is important to note that relatively small 1982 employment bases can often make for extremely large percentage changes over the projection period even when the total number of new jobs created is relatively small. For example, the 97 percent growth forecast for computer service technician jobs translates into approximately 53,000 new jobs over the thirteen-year projection time frame. On the other hand, electrical engineers, while growing an impressive but nevertheless less rapid 65 percent, will expand by over 200 thousand jobs because of the large current employment base.

It is interesting to note that four of the top five growth occupations listed in Table 3 have the word "computer" in their title. All ten of the occupations can be reasonably presumed to require some degree of specialized training, whether acquired in an educational institution or on-the-job. Half of the list of fastest growing industries can be characterized as being "high technology" or medical-oriented. And, despite the decreasing importance of manufacturing employment to the total U.S. economy, five of the fast growing industries are goods-producing. Thus, employment opportunities are projected to present themselves in a wide variety of industry settings.

Although the educational attainment of individuals currently employed in any occupation usually varies considerably, certain jobs require a level of training generally available today only in a college program. As a result, some occupations can be generally characterized as requiring a college education, and entry-level positions are usually filled by employers through campus recruiting or other means of screening those with post-secondary training.

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Table 3 . Ten Occupations Projected to Grow Most Rapidly, United States, 1982-1995

Occupation	Percent Growth In Employment	Estimated 1982 Occupational Employment
Computer Service Technicians	97	55,000
Legal Assistants	94	45,000
Computer Systems Analysts	85	254,000
Computer Programmers	.77	266,000
Computer Operators	.76	211,000
Office Machine Repairers	.72	56,000
Physical Therapy Assistants	68	33,000
Electrical Engineers	.65	320,000
Civil Engineering Technicians	64	35,000
Peripheral EDP Equipment Operators	.64	49,000

Note: Includes only detailed occupations with 1982 employment of 25,000 or more. Data for 1995 are based on moderate-trend projections.

Table 4 . Ten Industries Projected to Grow Most Rapidly, United States, 1982-1995

Industry	Percent Growth in Employment	Estimated 1982 Industry Employment
Medical and Dental Instruments (Mfg.)	.72	158,000
Business Services	.65	3,743,000
Iron Mining	.62	16,000
Computers and Peripheral Equipment (Mfg.)	.62	428,000
Radio and Television Broadcasting	.62	221,000
Other Medical Services	62	1,664,000
Plastic Products (Mfg.)	.56	460,000
Scientific and Controlling Instruments (Mfg.)	.54	226,000
Electronic Components (Mfg.)	52	561,000
New Construction	49	4,067,000

Note: Data include wage and salary workers, the self-employed, and unpaid family workers. Data for 1995 are based on moderate-trend projections.

"Mfg." = Manufacturing

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Between 1982 and 1995,it is projected that the U.S. economy will add 25.6 million new jobs, an increase of 25 percent over the total employment level of 1982. As a group, professional and technical jobs--jobs which generally require some post-secondary training, and usually a college degree--are projected to grow by a somewhat faster-than-average rate of 31 percent. Table 5 presents current and projected occupational employment levels for a number of occupations, with special emphasis on those jobs generally considered to require some postsecondary training.

Engineers of all specialties are projected to be in even greater demand as total employment should expand by about 49 percent over the 1982-1995 period. The fastest growing specialty is expected to be that of electrical engineers, an occupation which is projected to grow by 65 percent from 320,000 employed individuals in 1982 to 528,000 employed in 1995. In terms of total employment, electrical engineers are, and will continue to be the largest specialty within the engineering profession. The second-largest specialty, and the second-fastest growing, is that of mechanical engineers. A 52 percent growth rate is projected over the thirteen-year forecast period, with 1995 employment expected to total about 318,000 workers. The other large engineering specialities--civil, chemical, and industrial--are all projected to grow more than 40 percent over the forecast period.

Another occupational group expected to experience very rapid growth between 1982 and 1995 is that of computer specialists. Within this group, computer systems analysts are expected to expand by 85 percent and the employment of programmers at all skill levels, some not requiring a college degree, is projected to grow by 77 percent.

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Table 5 . Employment In Selected Occupations With 50,000 Workers or More, Actual 1982 and Projected 1995; United States

Occupation	Employment (in thousands) 1982	1995	Percent Change
Total, all occupations	101,510	127,110	25
Professional, technical & related workers	16,584	21,775	31
Engineers	1,204	1,788	49
Chemical engineers	56	80	43
Civil engineers	155	228	47
Electrical engineers	320	528	65
Industrial engineers	160	227	42
Mechanical engineers	209	318	52
Life and Physical Scientists	271	342	26
Biological scientists	52	70	36
Chemists	89	108	22
Engineering & science technicians	1,243	1,661	34
Drafters	302	318	5
Electrical & electronic technicians	366	589	61
Medical workers, except technicians	2,463	3,491	42
Dentists	173	213	24
Nurses, Registered	1,312	1,954	49
Pharmacists	151	192	27
Physicians	479	642	34
Therapists	202	294	45
Health technologists and technicians	627	898	43
Clinical laboratory technologists & technicians	209	292	40
Medical laboratory technicians	57	71	23
Medical laboratory technologists	103	150	46
Dental Hygienists	69	99	43
Radiologic technologists	110	157	43
Technicians, excluding health, science & engineering	364	453	24
Airplane Pilots	80	103	29
Computer specialists	521	943	81
Programmers	266	471	77
Systems analysts	254	471	85
Social scientists	206	267	30
Psychologists	83	110	33
Teachers	3,980	4,706	18
Adult education teachers	125	165	32
College & university faculty	744	632	-15
Graduate assistants	140	124	-11
Preschool,kindergarten,elementary schoolteachers	1,647	2,274	38
Preschool teachers	281	397	41
Kindergarten & elementary school-teachers	1,366	1,877	37
Secondary schoolteachers	1,024	1,152	13
Vocational education teachers	98	143	46

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Table 5 . Employment In Selected Occupations With 50,000 Workers or More, Actual 1982 and Projected 1995; United States

Occupation	Employment (in thousands) 1982	1995	Percent Change
Selected writers, artists & entertainers	301	406	35
Commercial & graphic artists	133	167	26
Designers	180	253	41
Musicians	124	155	25
Photographers	86	102	18
Public relations specialists	90	115	29
Radio & TV announcers & newscasters	55	70	28
Reporters & correspondents	51	66	29
Writers & editors	120	162	35
Other professional & technical workers	4,636	5,850	26
Accountants & auditors	856	1,200	40
Architects	84	118	40
Buyers, retail & wholesale trade	256	331	30
Clergy	317	332	5
Cost estimators	92	134	45
Counselors	148	163	10
Employment interviewers	57	86	52
Lawyers	465	624	34
Librarians	151	170	13
Personnel & labor relations specialists	203	250	23
Purchasing agents and buyers	177	225	27
Social workers	345	416	21
Underwriters	76	92	21
Managers, officials and proprietors	9,532	12,212	28
Salesworkers	6,967	8,771	26
Real estate agents and brokers	337	450	33
Sales agents & brokers, insurance	361	452	25
Sales representatives, nontechnical	583	743	27
Sales representatives, technical	1,320	1,707	29
Salesclerks	2,916	3,601	23
Security salesworkers	78	107	36
Travel agents	62	88	43
Clerical workers	19,049	23,998	26
Craft & related workers	11,591	14,769	27
Operatives	12,995	15,419	19
Service workers	16,241	20,706	27
Laborers, except farm	5,861	7,052	20
Farmers and farmworkers	2,691	2,407	-11

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The employment of accountants is expected to grow by 40 percent between now and 1995 to a level of about 1.2 million. The demand for medical professionals is also projected to continue at a high level over the next decade. Employment of registered nurses should grow to nearly 2 million in 1995, an increase of 49 percent over the current level, and there is projected to be an increase of more than one-third in the current employment of physicians in the years ahead.

As a group, teachers are expected to expand their ranks by a less-than-average 18 percent over the next decade. However, this number masks a wide variation in the trends for specific kinds of teachers. College faculty employment, including that of graduate assistants, is projected to show an absolute decline between now and 1995. Secondary schoolteaching, now providing jobs for a little more than one million people, is projected to add 13 percent to the current employment level. However, preschool, kindergarten, and elementary schoolteachers--now the largest specialty group of teachers in the profession--should enjoy a very healthy 38 percent growth rate during the projection period.

Lawyers, an occupation requiring both a bachelor's and an advanced professional degree, is expected to grow by 34 percent between 1982 and 1995. Coincidentally, the projected growth rate for physicians and lawyers is identical and the projected 1995 employment of a bit more than 600,000 jobs is also quite similar. Unfortunately, it is impossible to pinpoint the labor force points-of-entry for graduates with M.B.A. degrees. However, many surely become managers of various sorts, a major occupational group with employment in 1982 of about 9.5 million people. The 28 percent growth rate for the group is about average for the economy, although many specialties within this group--including most management jobs requiring the analytical and planning skills of the M.B.A. graduate--will grow much faster than this average.

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It is important to keep in mind that above-average growth in an occupation does not always mean that a large absolute number of jobs will be available to graduates during the ensuing years. The number of new jobs created in any particular occupation is dependent upon both the percentage growth forecast for the occupation and the number of people currently employed in the occupation. The occupations projected to generate the largest number of new jobs in our 1982-1995 projection period tend to be those that do not necessarily require a college education. Table 6 lists the 25 occupations expected to experience the largest absolute growth during this period. Together these occupations are projected to account for 40 percent of all new jobs in the U.S. economy between 1982 and 1995.

The total employment of building custodians is projected to grow by 779,000 between 1982 and 1995, while, as noted earlier, the total number of computer service technicians will expand by only about 53,000 jobs. Yet, the growth rate of 97 percent for the latter occupation is well above the 28 percent forecast for building custodians. Nevertheless, the list does contain a number of occupations that do, without question, call for a fair degree of postsecondary training. Registered nurses, kindergarten and elementary teachers, accountants, systems analysts, electrical engineers, and computer programmers all combine well-above-average growth rates with relatively large current employment to yield large numbers of new jobs.

When assessing the source of demand for entry-level personnel in a particular occupation, it is important to know something about what specific industries utilize these skills to a significant degree. A great deal of industry-by-occupation employment information is available for the U.S. economy.

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Table 6. Twenty-five Occupations with the Largest Projected Job Growth, United States 1982-95

Occupation	Change in Total Employment (in thousands)	Percent Change
Building custodians	779	28
Cashiers	744	47
Secretaries	719	30
General clerks, office	696	30
Salesclerks	685	24
Nurses, registered	642	49
Waiters and waitresses	562	34
Teachers, kindergarten and elementary	511	37
Truckdrivers	425	27
Nursing aides and orderlies	423	35
Sales representatives, technical	386	29
Accountants and auditors	344	40
Automotive mechanics	324	38
Supervisors of blue-collar workers	319	27
Kitchen helpers	305	36
Guards and doorkeepers	300	47
Food preparation and service workers, fast food restaurants	297	37
Managers, store	292	30
Carpenters	247	29
Electrical and electronic technicians	222	61
Licensed practical nurses	220	37
Computer systems analysts	217	85
Electrical engineers	209	65
Computer programmers	205	77
Maintenance repairers, general utility	193	28

Note: Includes only detailed occupations with 1982 employment of 25,000 or more. Data for 1995 are based on moderate-trend projections.

Table 7 summarizes this information for three college-degree occupations: engineers, programmer/analysts, and accountants. The tables reveal that, in 1982, 51 percent of the 1,204,000 engineers employed throughout the nation worked for manufacturing firms. Another 12 percent worked in federal, state, or local government units, while 11 percent were employed by specialty engineering/architectural service businesses. Newly trained engineers are likely tc find the best opportunities in these sorts of firms, and relatively few openings in finance or insurance businesses.

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A final piece of information that should be part of a new job seeker's understanding of the job market concerns the replacement of workers who leave an occupation. In addition to the more than 25 million new jobs which the economy is projected to generate between 1982-1995--jobs which will represent an addition to the current employment base--many times this number of jobs will become open due to the movements within the labor force. Table 8 presents a summary of estimated replacement rates for selected occupations. The annual replacement rate is the percentage of total employment in the occupation requiring additional workers to fill jobs which become open due to individuals transferring to a different occupation, becoming unemployed, or leaving the labor force because of retirement, family responsibilities, pursuit of additional education, etc. The replacement of these workers does not result in a net increase in occupational employment.

For example, of the approximately 26,500 new jobs for accountants projected to become available in the average year between 1982 and 1995, an additional 70,000 job openings are projected to occur each year in the occupation--a reflection of the need to replace those accountants who either permanently or temporarily leave the job.

Although most occupations requiring a college education have replacement rates well below the overall average of 19.4 percent, a very large number of jobs will be available every year because of the dynamics of the ever-changing labor force.

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Table 7 . Industry Distribution of Employment for Selected Occupations; United States, 1982

Engineers

Industry	Percent of 1982 Occupational Employment
Mining	3%
Construction	4
Manufacturing	51
Machinery	11
Electronic Equipment	13
Transportation Equipment	11
Transportation, Communication, Utilities	7
Trade	4
Finance, Insurance	1
Services	18
Business Services	5
Engineering, Architectural Services	11
Government	12

Computer Programmers/Analysts

Mining	2%
Construction	1
Manufacturing	23
Machinery	8
Electronic Equipment	5
Transportation Equipment	2
Transportation, Communication, Utilities	5
Trade	9
Finance, Insurance	14
Services	34
Business Services	24
Government	12

Accountants

Mining	2%
Construction	3
Manufacturing	18
Machinery	3
Electronic Equipment	2
Transportation Equipment	2
Transportation, Communication, Utilities	5
Trade	13
Finance, Insurance	10
Services	36
Business Services	3
Accounting Services	20
Government	13

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Table 8. Employment Replacement Rates for Selected Occupations; United States, 1980-1990.

Occupation	Annual Replacement Rate
Total of all employed, age 16 and over	19.4%
Professional, technical and kindred workers	11.2
Accountants	8.2
Computer programmers	8.7
Computer systems analysts	5.3
Civil engineers	6.9
Electrical engineers	4.1
Industrial engineers	14.6
Mechanical engineers	4.3
Lawyers	4.8
Librarians	13.9
Dentists	1.2
Physicians	1.4
Registered nurses	10.2
Therapists	10.2
Social workers	16.3
Elementary schoolteachers	10.6
Preschcol, kindergarten teachers	19.3
Secondary schoolteachers	9.3
Drafters	12.6
Vocational, educational counselors	13.5
Managers and administrators, except farm	11.6
Salesworkers	23.3
Clerical workers	21.6
Craft and related workers	14.1
Operatives	20.9
Service workers	27.5
Laborers, except farm	30.4

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V. RECRUITING ACTIVITY BY MAJOR FIELD OF STUDY

Engineering

Once again the job market this year for graduates of engineering programs is very good. On average, it was found that the number of companies on New England campuses recruiting the engineering class of 1984 to be up about 10 percent over the number that had actively recruited during 1983. The total number of job offers being made by this group of companies appears to be up slightly more, averaging a 20 percent increase over last year's level.

By many accounts, 1983 was the worst year for new engineering graduates since the 1973-75 recessionary period. Although most graduates of engineering programs had received job offers by the end of the academic year, relatively few received multiple offers so common a few years ago. In this respect, recruiting of the 1984 class represents a return to form as many graduates are once again being offered a variety of job opportunities.

As has been the case for several years, demand for graduates of electrical, mechanical, and chemical engineering programs are in greatest demand and generally command the highest starting salaries. Entry-level salaries for new engineers is averaging about $26,500, approximately four percent above the average salary offered the 1983 graudates. Mechanical, chemical, and electrical engineers are being offered about $1,000 more than the overall average, while most industrial and civil engineering graduates are commanding slightly less in the entry-level job market.

In line with the increased defense spending of recent years, many electronics, computer equipment, and telecommunications equipment manufacturers are actively seeking new electrical and mechanical engineers. Fortunately for the many engineering graduates of New England colleges who wish to remain in the

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region, Massachusetts and Connecticut have above national average concentrations of defense-related industries. This, coupled with a generally strong non-defense "high technology" industry base in both the manufacturing and nonmanufacturing sectors, has made for many job opportunities with New England companies during the past several years. In addition, the recent establishment and growth of biotechnology-related companies has increased the demand within New England for chemical engineering graduates.

Computer Sciences

The demand for graduates of computer science programs remains second only to the demand for new engineering graduates. This fact, by itself, is somewhat misleading because many graduates with very specific training in computer science are actually part of an electrical engineering program. Those programs which most formally combine the disciplines of engineering and computer science are often labelled "computer engineering" programs. Predictably, there was a high level of demand for graduates with combined computer science/engineering training and they commanded the highest starting salaries.

Among "high technology" manufacturers, particularly those making computers, and related equipment and telecommunications equipment, starting salaries for computer scientists averaged $28,000. Those graduates possessing both knowledge and experience in software applications commanded somewhat higher starting salaries. Graduates of computer science programs are also in great demand by nonmanufacturing companies, particularly banks and insurance firms. However, in these type of companies, except where a management information system application of computer skills is called for, starting salaries are considerably less, about, $23,000 on average.

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The overall average salary of $25,000 for 1984 computer science graduates reflects this rather wide range of starting salaries. In general, when graduates are being recruited for positions which are software development or systems engineering related, the jobs tend to be, with some exceptions, relatively well-paying and within manufacturing firms. For entry-level programming or systems analyst jobs the starting pay is usually a bit lower. Within this group, starting salaries tend to be somewhat higher with manufacturing firms than with insurance companies or banks.

Demand for computer scientist graduates has been very high for the past five or six years and is projected to remain high for the balance of the decade and beyond. Knowledge of this projected continued demand has obviously been taken into account by curriculum developers in major New England colleges. Almost without exception, universities have established computer science programs at the undergraduate level, programs which have begun to yield a supply of students more or less sufficient to meet the current demand. As a result, many fewer mathematics and physical science majors--graduates with some degree of special computer-related skills--are being offered entry-level positions for jobs where computer science is the preferred degree. A few years ago, math and science majors were routinely offered programmer and systems analysts positions because there was an inadequate supply of computer science graduates. The increased competition for the better-paying jobs in the largest or fastest-growing "high technology" companies has allowed employers to place greater emphasis on grade point average and on the graduates knowledge of emerging trends in computer and other technology specialties.

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Accounting

Continued strong demand for the region's accounting majors was in evidence during the 1984 academic year, and average starting salaries were up about 4 percent from the year before. The "Big Eight" public accounting firms were again very active on New England college campuses, after cutting back to a certain extent during 1983. At the same time, many smaller regional accounting firms and many manufacturing companies stepped up recruiting for their accounting staffs. Overall, the number of companies recruiting to fill accounting positions was up about 10 percent over last year, and the total number of job offers jumped by nearly one-quarter.

The average starting salary of $19,000 reflects a fairly narrow range between companies of the same general type. The "Big Eight" national accounting firms appear to be offering an average of slightly over $20,000 this year, while smaller regional firms are offering average entry-level salaries which average about $18,500. A somewhat wider range is represented among manufacturing firms seeking to fill "in-house" positions, from $16,000 to $21,000 depending upon size of company, industry, and specific work assignment of the recruit.

In general, there appears to be increased competition among accounting graduates for the "best" jobs. Companies are looking for greater versatility in their recruits today than was the case several years ago. Most of the larger firms have a flourishing management consulting business in addition to the traditional public accounting function, and thus find graduates with a good computer science background especially attractive. As always, grade point average, extracurricular activities, and demonstration of leadership qualities are very important with the "Big Eight" firms. Those graduates who "score" well on those points and, in addition, have a solid computer

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application background, can often land especially well-paying jobs as management information system (MIS) trainees. The demand for MIS people appears to be growing and the starting salaries often reflect a premium for those skills.

Business

Consistent with the general business expansion of the last year, companies are much more active in recruiting finance, marketing, economics, and the entire variety of business-related majors. Average starting salaries of $17,000-$18,000 a year are about 4-5 percent above the levels offered last year.

The firms most active in recruiting business graduates are in the banking, brokerage, insurance, and retail trade sectors of the economy. Large national financial institutions tend to pay the highest entry-level salaries, an average of about $20,000 a year, while management training programs in large retail trade companies are offering 1984 graduates starting salaries of about $16,500 a year. The insurance firms seem to be somewhat less well-represented on campuses than in years past, possibly a reaction to increased competition for a variety of financial services and the need to affect a "leaner" organizational structure.

Among the specific business majors, demand is greatest for finance and economics majors, particularly those with some demonstrated computer skills. The more quantitative nature of these specialties is attractive to employers recruiting for MIS jobs or for financial analyst trainee positions. The demand for individuals with some demonstrated computer-related skills or experience, technical skills which can be applied to solving business problems and organizing business information, seems at present to be almost unquenchable.

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Liberal Arts

The liberal arts graduate, often-maligned for choosing a major which is not "marketable", also faces improved employment prospects this year. Last year was an extremely difficult time for graduates of most liberal arts programs as, from most accounts, the number of job offers available to these students was the lowest in a decade. Offers this year are back up to the level, albeit a relatively low level, recorded in 1982.

Although social science graduates, particularly those with majors in economics, statistics, and mathematics, continue to have the best chance of being offered a job by those employers recruiting on campus, students majoring in English, humanities, or other liberal arts majors are finding many more companies interested in their special skills and talents. The average starting salary being offered to liberal arts graduates this year is about $16,000, but there exists a rather wide range around the average depending upon specific major, special skills, and industry of the employer.

The most active recruiters of liberal arts majors are retail trade establishments, banks, and insurance companies. In most instances, the entry position is a management trainee job involving exposure to the various facets of the company's business. In addition, some large manufacturing firms recruit these graduates, particularly economics majors, for financial or general management trainee positions. Insurance companies also recruit for sales and sales management positions from amongst this group, as well as having special interest in the math and statistics majors for actuarial jobs.

Retail trade starting pay is generally in the $14,000-$17,000 range, while some of the larger banks may offer top graduates salaries of approximately $19,000 to start. Competition for any of these positions remains keen among

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the very large number of liberal arts majors who graduate each year. As a result, employers can be "choosy" about who is offered an entry-level position. Indeed, recruiters insist that, because of the risk inherent in hiring these individuals whose interests tend to be more electric and less focused than the more technically/vocationally trained graduate, they must be much more attentive to other personal factors that might determine a recruit's future value to the organization. Consequently, factors including academic achievement, communication skills, maturity and relevant work experience are usually very important considerations in the recruitment of liberal arts students. A graduate's chance of receiving an offer are markedly improved if technical electives have been at least some part of the academic experience and if some quantitative abiiity can be demonstrated. Thus, graduates of colleges that have made the use of computer facilities some part of all academic programs are usually more actively sought after by recruiters than graduates of more "traditional" liberal arts programs.

This year, all placement directors and recruiters reported that liberal arts students today have a much greater career awareness than their counterparts of ten, or even five, years ago. In many instances, they begin using career planning resource centers well before their senior years and when the interview process finally does begin they are well-prepared. This more "hardnosed", "businesslike" approach to getting a job is clearly a reaction to the difficulties liberal arts students saw their classmates encounter during the past several recruiting years. They have seen that strong academic performance, good interview preparation, and an appreciation of the needs of the employer greatly improve their changes of successfully "landing" a job.

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Placement offficials agree that what attracts some employers to liberal arts graduates are the special hard-to-define special attributes and qualities that the best of the group possess. These broadly educated individuals learn fast and are versatile, excellent candidates for the management training programs offered by many large finance, trade, and manufacturing companies. In many other firms, particularly "high technology" or consumer goods manufacturing, liberal arts majors are sought after for technical writing position. Their thinking, learning, and communication skills are highly prized by employers who have complained in recent years about the decline in written and oral skills possessed by many graduates. Thus, while a higher proportion of liberal arts graduates than technical graduates will, in fact, encounter problems finding a job once again this year, opportunities do exist for those who have taken the time to plan and to prepare.

MBA's

The demand for graduates of Master's of Business Administration (MBA) programs continues to increase, especially among consulting firms and large companies with complex management organizations. However, the supply of MBA's seems to be increasing even more rapidly. Thus, competition among graduates for well-paying positions has intensified and the salaries being offered graduates of less pretigious programs have begun to level off. Overall, salaries offered to 1984 graduates of MBA programs in New England colleges averaged about $27,000, approximately five percent above last year's level.

Placement officials report that there appears to be a steadily growing demand for the management and analytical skills that the MBA graduate possesses. However, there is also evidence that some employers, especially small manufacturers, are turning away from recruiting MBA's due to the salary premium they must offer.

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Starting salaries vary widely from the $27,000 average due to a number of factors: recruiting industry, management specialty, related experience, technical/nontechnical undergraduate major, and--often most importantly--the institution granting the MBA. For example, the mean starting salary for the 1983 class of MIT's Sloan School of Management was $37,300--fully $10,000 above the overall regional salary average estimated for this year's New England MBA graduate. This class average can be further broken down by industry and job function. Although in all cases the salaries are likely to be well above what the "average" MBA would be offered, some sense of the relative demand by type of business and value by specialty can be gained by looking at the Sloan School 1983 statistics. The overall range around the $37,300 mean was from $20,000 to $60,000. The mean for nonmanufacturing industry recruiters, $38,100, was slightly more than for manufacturing firms, $36,300. The highest mean starting salary was offered by consulting firms, $44,700, while the mean for investment banking and miscellaneous financial services also exceeded $40,000 per year. The largest number of job acceptances within any single industry group were with electrical/electronics/instrumentation equipment manufacturers where a mean starting salary of $36,700 was offered. By job functional categories, 1983 starting salaries exceeded the mean for entry-level jobs in engineering, operations, project management, and planning. Sloan School graduates with a technical undergraduate major received starting salary offers nearly $3,000 more than their classmates with nontechnical undergraduate degrees, while those with five years or more of prior work experience received average offers about $5,000 higher than graduates with no full-time work experience prior to the MBA program.

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Education

The employment prospects for new graduates of Education programs has begun to improve, although starting salaries remain low in comparison to other major fields of study. Entry-level teaching positions were paying an average of about $12,500, although a few offers went as high as $16,000 a year. In general, private elementary and postsecondary schools are able to offer a more attractive starting salary than the often financially-troubled public school systems.

The improving job outlook for new teachers can be attributed to a number of factors. First, as a result of the well-publicized problems encountered by education majors entering the job market in recent years, the supply of new graduates from education programs has decreased dramatically. Thus, the current total annual new supply of education graduates is more in line with current demand. Secondly, largely because of increasing competition from certain private sector companies engaged in extensive in-house training activities, and the well-documented problems of a deteriorating teaching environment particularly in large urban schools, there is now a greater rate of turnover among members of the teaching profession than was the case of decade or two ago. In addition, an increasing number of private companies have been successful in luring some teachers--particularly those with mathematics and science skills--to better-paying and more challenging positions in the fast-growing high technology manufacturing sector. Finally, the national trend of "back to basics" which seems to be gathering momentum has at least stabilized the demand for English, language, and social studies teachers. Over time, some real growth in the demand for these specialists is possible although the overall trend in the employment of secondary schoolteachers is not likely to be favorable in the next ten years.

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At the present time there are shortages of science, mathematics, and special education teachers within many geographic areas. As long as high technology demands continue to grow, and teaching salaries remain relatively uncompetitive with the entry-level wages being offered by private industry, the shortage of mathematics and science teachers is likely to persist. Although proposed legislation would have the effect of increasing the supply of these teachers and raising their salaries, it will be at best several years before any real impact on the job market becomes apparent. There is still a general overall oversupply of elementary education teachers. However, the increased birth rate during the mid and late 1970's will eventually improve the outlook here also. One response to an increase in job openings may be increased competition from individuals trained in the profession who dropped out of the occupation or labor force because of the lack of opportunities. The extent to which this group of job reentrants will effect the teaching opportunities for new entrants is unknown. In general, however, the future of the teaching profession appears to be healthier than at any time in the past decade.

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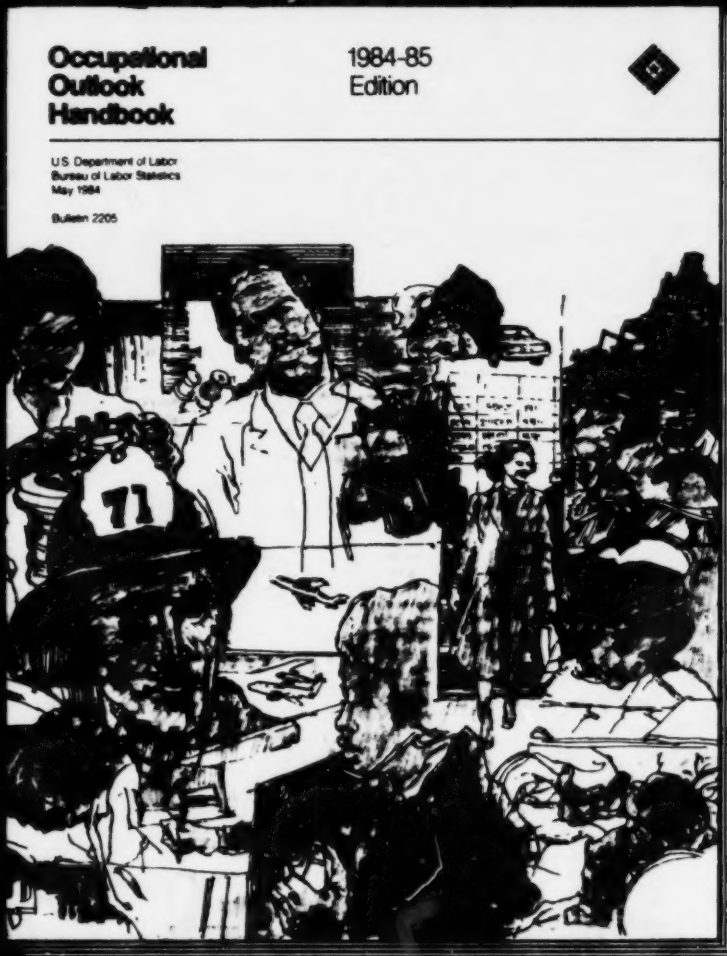

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